

CLAIMS

1. A method for recovering hydrocarbon trapped in a hydrate formation, comprising the steps of
 - (a) contacting the hydrate formation with an aqueous solution comprising from 10% to 75% by weight of a formate salt or an acetate salt of an alkali metal, or a mixture of two or more thereof, whereby said aqueous solution liberates hydrocarbon from the hydrate formation, producing a mixture of hydrocarbon and water vapour;
 - (b) transporting the hydrocarbon/water vapour mixture and the said aqueous solution to a separator, whereby the said aqueous solution absorbs water vapour from the mixture during the transportation step, to form a more dilute aqueous solution of the alkali metal salt, thereby inhibiting formation of hydrocarbon hydrates; and
 - (c) separating hydrocarbon from said dilute aqueous solution;
2. A method as claimed in Claim 1, including the additional steps of:-
 - (d) regenerating the aqueous solution of step (a) by heating said dilute aqueous solution to remove absorbed water vapour; and
 - (e) recycling the regenerated aqueous solution to step (a).
3. A method as claimed in Claim 1, including the step of subjecting the hydrate formation to hydraulic fracturing with a fracturing fluid in order to depressurise the hydrate formation and thereby facilitate the liberation of trapped hydrocarbon, wherein the fracturing fluid comprises an aqueous solution of from 10% to 75% by weight of a formate or acetate of an alkali metal, or a mixture of two or more thereof.
4. A method as claimed in Claim 2, wherein said fracturing fluid has the same composition as said aqueous solution of Claim 1.
5. A method as claimed in Claim 1, wherein said aqueous solution comprises at least 40% by weight of said salt.

6. A method as claimed in Claim 5, wherein said aqueous solution comprises from 40% to 65% by weight of said salt.

7. A method as claimed in Claim 1, wherein said salt is potassium formate.

8. A method as claimed in Claim 1, wherein said aqueous solution is heated prior to contact with the hydrate formation.

9. A method as claimed in Claim 1, wherein said aqueous solution is injected into the hydrate formation through an insulating jacket, the jacket having a layer of insulation fluid comprising an aqueous solution of from 10% to 75% by weight of a formate salt of any alkali metal or an acetate salt of any alkali metal, or a mixture of any two or more thereof.

10. A method as claimed in Claim 1, wherein a single well is drilled into a natural gas hydrate deposit, the well having concentric pipes providing at least two passageways, wherein the said salt is pumped down at least one of the said passageways, and gas and water formed by the disassociation of the hydrate are recovered from at least a second of the said passageways.

11. A method as claimed in claim 10, wherein the well is drilled so as to intersect the hydrate deposit vertically or so as to follow the inclination of the hydrate deposit.

12. A method as claimed in Claim 1, wherein two or more wells are drilled into a hydrate deposit from the surface and connected by connecting passageways between the said wells in the hydrate formation, and wherein the said salt is pumped down at least one said well, and gas and water formed by the disassociation of the hydrate are recovered from at least a second said well via the said connecting passageways.

13. A method as claimed in Claim 12, wherein the connecting passageways are inclined, horizontal or multilateral.

14. A method as claimed in Claim 12, wherein the connecting passageways are provided with supports.

15. A method as claimed in Claim 12, wherein pressure is applied to the said at least one said well, and wherein reduced pressure is applied to the said at least one second said well.